Ruptured false abdominal aortic aneurysm during pregnancy: Caesarean delivery followed by aortic reconstruction

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We describe a case of a successfully treated ruptured abdominal aortic aneurysm during pregnancy. The importance of close clinical follow-up after any aortic reconstructions is highlighted. (J Vasc Surg 2001;33:1125-7.)

CASE REPORT

A 32-year-old woman who had hypertension with coarctation of the descending thoracic and upper abdominal aorta underwent surgery at the age of 10 years in another institution. At this time, a bypass grafting procedure with a woven Dacron graft was performed between the distal aortic arch and the infrarenal aorta. The patient did not require further intervention in the next 22 years. There was no further follow-up during the 15 years before she was admitted to our department. In April 1999, the patient was admitted to our department at 33 weeks' gestation of her second pregnancy with acute left upper quadrant abdominal pain of 10 hours' duration.

The patient believed she was having labor pains. Her physical examination was unremarkable except for localized midabdominal and left upper quadrant tenderness. A huge false aneurysm arising at the distal bypass grafting anastomosic site behind the intact gestation was shown by means of an abdominal ultrasound scan (Fig 1). An urgent consultative meeting involving an anesthesiologist, a gynecologist, a radiologist, and a vascular surgeon was called to define the logistic management of the case. They decided to perform an aortography before the planned combined operation for preoperative assessment and mapping of the thoracoabdominal bypass graft (Fig 2). The patient was then taken to the operating theater for an emergency laparotomy. During preparation of the infrarenal aorta, the fetal monitor showed signs of prolonged bradycardia, and therefore, a caesarean delivery was immediately performed. During this maneuver, free rupture of the aneurysm with severe hemorrhage occurred. The bleeding site was temporarily controlled with manual pressure, while a healthy 2050-g boy was delivered. For a period of approximately 5 minutes, the patient was hemodynamically unstable. The distal part of the now entirely disjointed thoracoabdominal prosthesis could be identified and clamped in the upper left retroperitoneal cavity. Bleeding from the suprarenal aorta was controlled with a balloon catheter, and the infrarenal aorta was clamped. A 16-mm woven tubular Dacron interposition graft was then anastomosed between the existing Dacron bypass graft and the infrarenal aorta, after trimming the preexisting anastomotic site.

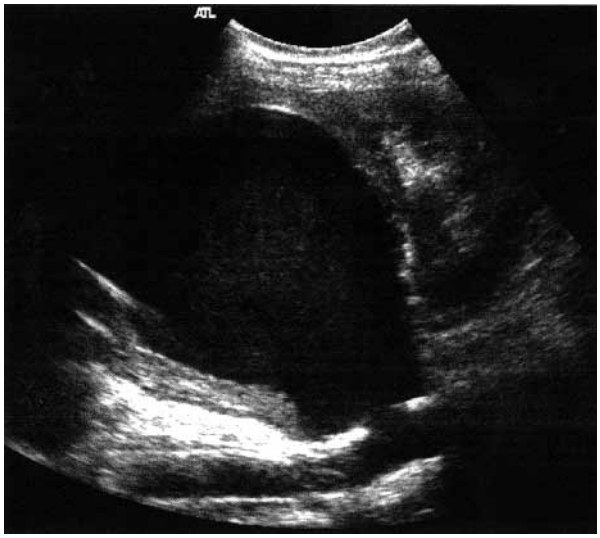

Fig 1. Ultrasound scanning cross section of left lower abdominal quadrant with 5-MHz sector tracer showing false aneurysm that is 10 cm in diameter at distal anastomosis of thoracoabdominal Dacron bypass graft.

The postoperative course of the mother was uneventful. However, the baby had a respiratory distress syndrome, which required prolonged respiratory therapy. After a short recovery, the mother was discharged home on the 11th postoperative day. Three weeks later, the baby was discharged from the neonatal unit. Both were doing well on follow-up 6 and 13 months after the intervention (Fig 3).

DISCUSSION

Pregnancy-related vascular emergency is a rare, but severe and potentially lethal complication. More than 50% of ruptured arterial aneurysms in younger women are pregnancy related and associated with a high maternal mortality rate.[1] Visceral or renal aneurysms recognized during pregnancy are a serious threat to the survival of mother and fetus[2-4]; rupture of cerebral artery aneurysms

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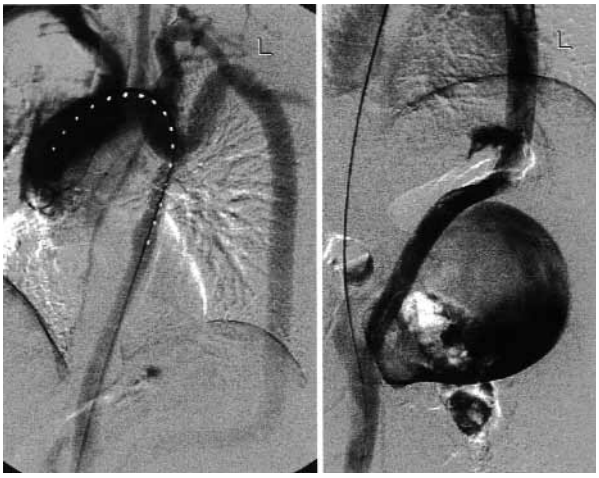

Fig 2. Aortography demonstrating Dacron bypass graft from left subclavian artery to infrarenal abdominal aorta with a false aneurysm at distal anastomotic site.

may also occur.[5] Aortic[6,7] and coronary artery[8] dissections in pregnant women have been incidentally reported, in particular with coexisting medial degeneration, such as Marfan syndrome. In a few cases, aortic surgery performed immediately before or after caesarean delivery has been reported.[9,10]

Despite appropriate surgical reconstruction for coarctation, aortic complications, including restenosis, aneurysm formation, and rupture, may occur during long-term follow-up; in particular, false aneurysms are not uncommon.[11,12] Therefore, screening on a regular basis with adequate treatment of risk factors is mandatory. Our patient had several risk factors, one of which was growth differential. The patient initially underwent surgery at 10 years of age. Although the length of the bypass graft may have been suitable at that time, by the time the patient reached maturity, it was likely too short. This would create tension on the anastomosis. This, in addition to insufficient control of hypertension, lack of follow-up visits during the last 15 years, and known vascular and hemodynamic changes during pregnancy may have contributed to the development of the false aneurysm.[5] Additionally, manipulation during the cesarean delivery may have caused the free rupture of the preexisting false aneurysm.

Regular follow-up is recommended for the detection of late postoperative complications in patients who have undergone surgery as children or who are thought to have significant hemodynamic factors that might put stress on the anastomoses (eg, pregnancy, uncontrolled hypertension). Screening for aneurysm formation after aortic reconstruction can be performed with ultrasound scanning or magnetic resonance angiography, and we recommend it be done at 12- to 18-month intervals. These methods are noninvasive, radiation free, and contrast agent free and allow high-resolution imaging of the thoracic aorta.[10] Early diagnosis of aneurysm formation or other complications offers the possibility of adequate elective surgical or interventional radiologic treatment with significantly less risk.

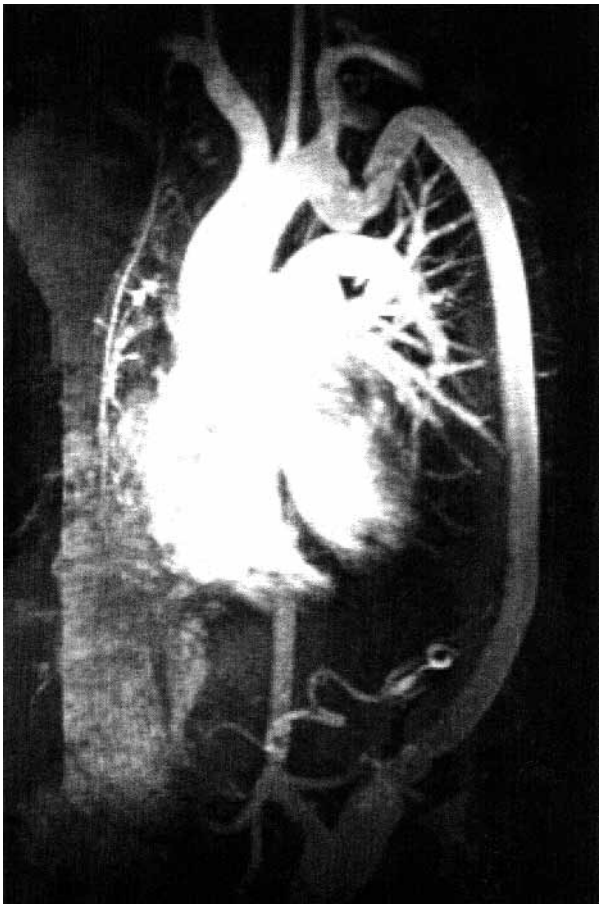

Fig 3. Magnetic resonance angiography 13 month postoperatively. Note lengthy distance coarctation of descending aorta, thoracoabdominal bypass graft, and regular interposition graft to the abdominal aorta.

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